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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/540,024	03/31/2000	Arthur O. Tzianabos	B0801/7169	1627

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EXAMINER

LIU, SAMUEL W

ART UNIT	PAPER NUMBER
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1653

DATE MAILED: 07/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/540,024

Applicant(s)

TZIANABOS ET AL.

Examiner

Samuel W Liu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6-19 and 149-163 is/are pending in the application.
- 4a) Of the above claim(s) none is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6,11,12,14-19,149,152-156 and 158-163 is/are rejected.
- 7) ☒ Claim(s) 7-10, 13, 150-151 and 157 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Status of claims

Claims 1, 6-19 and 149-163 are pending

Applicants' amendment filed 21 May 2004, which amends claims 1, 19 and 154, and cancels claims 2-5 and 20-148 has been entered. Also, applicants' request for extension of time of three months (filed 21 May 2004) has been entered. Thus, claims 1, 6-19 and 149-163 are pending and reexamined in this Office action.

Note that grounds of objection and/or rejection not explicitly restated and/or set forth below are withdrawn.

Claim Rejections - 35 USC §112, the second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the applicant regards as his invention.

Claims 15 and 154 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 recites "non-native polypeptide"; the recitation is unclear because "non-native" ambiguously refers to (i) a denatured form of said polypeptide which structurally and functionally differs from the native form of the polypeptide; or (ii) a recombinantly produced or chemically modified polypeptide. Which one does the claim regard? Note that the specification does not provide sufficient definition for this recitation.

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Claim 154 is unclear in "... are on adjacent amino acids" because "adjacent" can ambiguously refer to proximity in a space (e.g., in ternary structure of the polypeptide, the positive charged Arg residue may be adjacent to said negative charged Asp residue), or in primary structure, i.e., amino acid sequence. The specification does not define "adjacent amino acids" in term of protein *primary* and *ternary* structures thereof.

Response to the rejection under 35 USC 112, the second paragraph

The response filed 21 May 2004 asserts that the non-native polypeptide has been clearly defined at page 7, lines 13-15 of the specification (see the response at page 9, the 3rd paragraph). The applicants' argument is found to be not persuasive because page 7, lines 13-15 of the specification only mentions "non-native polypeptide" but does not provide further definition. Thus, the above rejection is maintained.

Claim Rejections - 35 USC §102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The claims 1, 6, 11-12, 14-19, 149, 152-156, 158-163 are rejected under 35 U.S.C. 102(b) as being anticipated by Ferrari, F. A. *et al.* (US Pat. No. 5514581).

In Example 3, Ferrari *et al.* teach a composition comprising protein polymer (termed CLP-CB, i.e., collagen-like protein) of SEQ ID NO: 66 having molecular weight

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32,000 daltons (see column 39, lines 55-65) which is less than 50 KDa. The protein polymer comprises 5 *identical* repeating units (Gly-pro-Lys-Gly-Asp-Arg-Gly-Asp-Ala-Gly-Pro-Lys-Gly-Ala-Asp-Gly-Ser)₅ (see residues 69-81, 129-141, 189-201, 249-261 and 309-321), which further comprise the repeating charge motifs, i.e., Lys-Gly-Asp-Arg-Gly-Asp-Ala-Gly-Pro-Lys-Gly-Ala-Asp (*positively charged residue and negatively charged residue are underlined*). The Ferrari's composition has additional structural features: (i) the positively charged moieties of the repeating charge motifs are separated by intervening sequences comprising more than 8 amino acids (see SEQ ID NO:66), which have a distance larger than 32 Å (in view of that a dimension occupied by 8 *amino acid residues* is equivalent to 32 Å); and (ii) the intervening sequence is neutral (i.e., containing no charges amino acid residues). Note that the Ferrari's composition (CLP-CB) is used in therapeutics, e.g., wound dressing (see column 35, lines 37-39) and combined with organic agent (see Example 3 in column 47, line 21 to column 48, line 10); thus, the Ferrari's composition is a pharmaceutical composition. Therefore, the Ferrari's teaching meets the all the limitations of the instant claims 1, 19 and 163.

In the protein polymer, since the intervening sequence comprising at least 43 amino acid residues, i.e., the repeating charge motifs are separated by a distance larger than 155 Å, the above Ferrari' teaching anticipates the instant claims 11-12.

The repeating charge motif (Lys-Gly-Asp-Arg-Gly-Asp-Ala-Gly-Pro-Lys-Gly-Ala-Asp) has positive to negative charge ratio of 1:1, which anticipates the instant claims 18 and 162.

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Ferrari *et al.* teach that the composition is modified by amide cross-linking (see Example 3 at column 41, lines 1-2), which anticipates the instant claims 6, 16 and 159-160 of the instant application.

Also, Ferrari, *et al.* teach that the protein polymer is recombinantly synthesized (see Example 3 at column 39), which anticipates the instant claims 14-15 and 158-159.

In the said repeating charge motifs, the positive and negative charges are separated by at least one neutral amino acid (see Lys-Gly-Asp...), which anticipates the instant claim 152.

In the Ferrari's protein polymer, the repeating charge motifs are separated by a sequence of at least 43 amino acids, which anticipates the instant claims 153, 155-156.

In the said repeating charge motifs, the positive and negative charges are on adjacent amino acids (see ...-Gly-Asp-Arg-Gly-), which anticipates the instant claim 154.

Because the protein polymer of SEQ ID NO:66 has more than 26 free amine groups that are subject to said amide cross-linking modification, at least 10 amino acid are such modified. Thus, the above Ferrari's teaching is applied to the instant claims 17 and 161.

Response to the rejection under 35 USC 102

The response filed 21 May 2004 argues that the independent claims 1 and 19 have been amendment in such that the polymer of the claims comprises entirely identical repeating units; and thus, the Ferrari et al. patent does not anticipate the instantly claimed invention (see pages 10-11 of the response). The applicants' argument is found to be

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unpersuasive because the Ferrari's protein polymer does entirely comprise identical repeating units (see SEQ ID NO:66 structure, and the rejection *supra*).

NOTE

Claims 7-10, 13, 150-151 and 157 are objected to as being dependent upon a rejected base claims 1 and 19, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

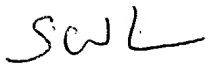
No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel Wei Liu whose telephone number is 571-272-0949. The examiner can normally be reached from 9:00 a.m. to 5:30 p.m. on weekdays. If

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attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Weber, Jon, can be reached on 571-272-0925. The fax phone number for the organization where this application or proceeding is assigned is 703 308-4242 or 703 872-9306 (official) or 703 872-9307 (after final). Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-4700.



Samuel Wei Liu, Ph.D.

July 14, 2004



KAREN COCHRANE CARLSON, PH.D
PRIMARY EXAMINER